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What, if Anything, Can the History of Emotions Learn from the Neurosciences?

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Neuroscience (or brain science) forms a constantly evolving field of the life sciences that often claims to possess the most innovative tools for uncovering the yet unknown mysteries of the human mind and especially of the emotions. Brain scientists have also emerged as fashionable popularizers of their field, and thus scientists of the affective neurosciences are generating a distinct discourse on emotions, which may be changing the way we understand them. Today the social neurosciences make a strong claim that human brains are malleable, or plastic. This notion has already had repercussions for the theoretical insights of the history of emotions that emphasize the interconnectedness of embodied emotional experience, the senses and culture.[1]

Feelings are indeed interesting for brain scientists as they seem to connect the non-conscious and cognitive, or the biological and cultural, capacities of the human mind. This is where neurosciences differ from cognitive sciences, for instance. For a long time, cognitive scientists dismissed emotions as non-cognitive and uninteresting phenomena. But for the past twenty-plus years, they have sought to translate them as intellectual and intentional 'thoughts'. This resembles the way the discipline of the history of emotions has usually understood the changing emotional rhetoric and expression in the past. It has been most convenient for historians to look at emotions as cultural and socially constructed artefacts and, indeed, 'thoughts'.[2] Interestingly, a number of neuroscientists have also concluded that the separation between emotion and cognition is artificial from the perspective of science – human thought is emotional activity, and emotions are thoughtful.[3] As it is, during the past

decade and especially the past few years, a rapid biocultural shift has begun in the history of emotions.[4] The dualities between nature and culture, or the conscious and unconscious, have been forcefully demolished. Simply stated, this means there is no nature-nurture dichotomy, but always both. The dyad has in fact lost its conceptual meaningfulness.[5] Emotions are social constructs, yet they are not.[6] The rapidly changing neurosciences may lack a grand theory, but the keywords are now neuroplasticity and social brain science. This engages neurosciences with the history of emotions. As Rob Boddice has put it, it may be possible to address the recent developments in the field as the 'neuro turn'.[7]

However, there seem to be persistent epistemological differences between the human and life sciences in addressing emotions. Yet, for all the seeming differences, one is able to find common ground. Both disciplines promote the view that emotions serve partly cognitive and goal-driven functions and are thus susceptible to change. Brain sciences and related fields have worked towards eradicating the Cartesian dualism between the body and the mind, and the human sciences have also all but dismantled the persistent divide between rational reason and irrational feeling, which in itself has been a Western, culturally shaped concept. Cultural studies treats emotions, or 'affects', as embodied cultural phenomena, which in turn may not be that far away from the interplay between the adaptive body/brain and the changing environment supposed by the neurosciences.

Historians of emotions have until very recently been rather reluctant to integrate neuroscientific views into their discipline, and critical of attempts to do so, often for valid reasons reflecting the academic distance between history and the presentist, rapidly evolving brain sciences. However, advances in the brain sciences have already been taken into consideration by the social sciences. In this light, tentative steps towards dialogue among different disciplines have been implemented in the new field of critical and/or social

neurosciences. This dialogue aims at bringing the cultural and the social back into research on the human brain, thus potentially offering fertile ground for interdisciplinary approaches.[8]

The most fundamental division between the history of emotions and the neurosciences seems to concern language. Historians of emotions study emotional concepts and representations of emotional experiences expressed in a textual, verbal and visual, yet linguistically communicated, mode. For neuroscientists, the emotions refer to an entirely different mode of communication, measured by brain scans and conceptualized not as expressions or representations of emotions but as bodily functions. These differing perspectives on emotions may be seen in the context of the classic division between the 'two cultures', those of humanities and sciences, perpetuated in higher education at least since the early twentieth century.[9] Today these two academic and emotional cultures increasingly call for dialogue that would dissolve the nature-culture binary.

Towards dialogue between the history of emotions and the neurosciences

One of the reasons for the urgent need for dialogue has been, undoubtedly, the pinnacle status of the neurosciences within academe and in the wider society. As sociologist Nikolas Rose and Joelle M. Abi-Rached have demonstrated, the brain has frequently been equated with the mind, not only within academe but in popular presentations as well. The one who understands the brain has taken the front seat in explaining the human mind. For obvious reasons, there might be epistemological problems with this view, but more to the point, this view may pose biopolitical problems. This is the case when neuroscientists have been consulted as experts in criminal trials and in social policy initiatives, which are traditionally the fields of criminologists and social policy experts. However, a critical stance towards the social implementation of brain science does not mean its dismissal; rather, such a stance requires an understanding of how society, the human body/brain and cultural meanings are embedded

and constantly influence and rework one another.[10] The Cartesian perspective placed the life sciences squarely within the universal sphere, whereas the human sciences have explored a socially constructed culture. This clear-cut division has not been viable for a rather long time. Culture and biology cannot be separated in human consciousness.

Considerably more difficult than making this theoretical statement is, obviously, implementing it methodologically. As stated, historians of emotions have recently been alerted to integrating 'biology' into their field. The initial difficulties of this integration were demonstrated, for instance, by the methodological volume on emotions history edited by Susan J. Matt and Peter N. Stearns, entitled *Doing Emotions History* (2014). The historian of religion John Corrigan stated in the volume that the challenge to understanding the emotions posed by the powerful life sciences, or 'biology' – what many of the authors call the natural sciences – should, one way or another, be taken into consideration in the history of emotions. 'Biology can and should be integrated into that enterprise [emotions history], though how and to what extent that will permit an integrated interpretation is still an open question,' Corrigan wrote.[11] However, in the short afterword of *Doing Emotions History*, Matt and Stearns confidently wrote that the 'steady development of research in neuroscience cries out for an imaginative combination with history'. Acknowledging the methodological difficulties in combining the two, the writers nevertheless expected more innovative research in the near future.[12] Indeed, in the few years since their call for innovative research, a steady theoretical development has gone through the history of emotions. In particular, Boddice's recent theoretical treatise on the history of emotions fully embraces a biocultural approach to past feelings. For Boddice, the social neurosciences offer the most fruitful present companion to the analysis of ever-changing feeling.[13]

For a long time, the difficulty of merging neurosciences and history arose from the rather old-fashioned perspective on biology as representing deterministic genes, or biologism.

Admittedly, many of the (evolutionary) biologists see emotions primarily as hardwired and genetically programmed constants, a view that many evolutionary psychologists share. Tentative enterprises in combining evolutionary psychology with historical research may have resulted in rather clear-cut divisions between universal and deterministic basic emotions, on the one hand, and the less important cultural changes and nuances, on the other hand. It is difficult to see a common ground in this enterprise, although few historians are willing to deny basic evolutionary assumptions. The problem is that evolutionary psychology is not interested in historical change per se but in evolutionary history, and thus emotions remain merely biologically constituted reactions to events, not the varied actions supposed by the history of emotions.

The deterministic perspective relying on the assumption of basic emotions is not, however, shared by a growing number of neuroscientists and many other practitioners of the life sciences. I am not a trained brain scientist and therefore am not capable of dwelling on the intricacies of the discipline in detail. But suffice it to say that today's mainstream neuroscience has come a long way from seeing humans as programmed or hardwired 'walking brains'. Thus, it is interesting to observe that at the same time as understanding the brain has been equated with understanding the mind, the brain sciences themselves have become more open to social and cultural approaches. To paraphrase Rose and Abi-Rached, today's brain sciences now see humans once again as people who have brains. The brain shapes the person, while the person shapes the brain. Brains have suddenly become social.[14]

The traits of the brain that emphasize both its plasticity and its social dimension have indeed perhaps become catchwords that suggest explaining everything in a similar fashion to how the localization of certain emotions and actions in brains used to explain things. Nevertheless, this shared understanding of ever-changing brains has opened up a promising way to combine culture and biology. Biocultural approaches to the emotions have recognized

that language and culture shape the neural connections in the brain and thus also our emotions – even genetically identical individual brains are never the same, let alone the brains of people from different cultures or historical eras.[15] However, it is interesting to observe that neuroplasticity may come close to the definition of social constructivism (at least in its modest, non-relativist mode). Biology may thus even confirm what social scientists have thought concerning the nature of human experience for decades. Neuroplasticity, however, is not a constant. In particular, as people grow older, the capacity of the brain to adapt diminishes, although it never seems to cease completely.

Of course, there is the study of neurohistory, or 'deep history', as formulated by Daniel Lord Smail, who traces the interplay between a changing human environment and the human body by utilizing neuroscientific, evolutionary and epigenetic hypotheses.[16] As he states in his 2014 article, the approach of neurohistory

> begins with the principle that the human brain is relatively plastic and therefore continuously open to developmental and cultural influences. This does not mean that we should treat the brain as a blank slate. Instead, such influences, as they interact with given brain/body systems, can generate unpredictable forward-acting effects.[17]

Reliable historical sources, as well as the rapidly changing hypotheses of the brain sciences, may prove to be a major problem in this enterprise. However, his endeavour points in the direction of understanding how history and the social and physical environment are ingrained in the human body and brain, and how, vice versa, the adaptive human body and brain shape the environment and culture in time.[18] Moreover, Smail has introduced chemical and psychotropic explanations into the history of human experience, such as the effect of pollution, drugs, the Internet or rituals that generate neurotransmitter responses, bodily

reactions and emotions. Alternating stress responses induced by social hierarchies form a key approach in Smail's theorizing.[19]

Yet the hypothetical nature of his work is highlighted, for instance, in the abstract of the aforementioned article on the application of neuroscience to the history of compulsive hoarding: 'Using the coevolutionary approach intrinsic to environmental history, we can treat the rise of compulsive hoarding as an emergent phenomenon generated by the unpredictable ways in which cognitive and endocrinological systems have interacted with a changing material environment.'[20] The article seems to suggest that an in-built capacity for hoarding may become a compulsion once humans are removed from 'natural' communities of scarcity.

This all may sound plausible and interesting as such, but it remains unclear whether the description of the interaction between biological functions and the environment adds anything historically substantial to the interaction between changing humans and the changing environment supposed by social constructivism since the 1960s.[21] Yet Smail's approach not only frames but bypasses the constructivist view with neurally adaptive and biological primacy. Whereas cultural historians may treat hoarding as a feature of consumer and trash society or an inherited habit from the war generations, Smail goes further and supposes that the things hoarders gather are proxy serotonin stimulants. Low serotonin levels in the brain are associated with depression and low confidence, and modern consumerism is at the root of hoarders' depression.[22] In this way Smail tries to detect the interaction between the changing environment and bodies as biocultural entities.

The 'neuro turn' reflects a rapprochement between the history of emotions and neurohistory.[23] However, Smail's overall approach is somewhat based on the assumption of universal basic emotions, a notion that has proved problematic both within and outside the history of emotions.[24] While certain pan-human emotions such as anger and enjoyment may well be considered more transcultural and transhistorical than some others in their

physiology, sensory experience and even expression, it has nevertheless proved rather difficult to decipher which particular emotions are supposed to be universal and how they are supposed to be universally expressed or perceived.[25]

The recent theoreticians of the history of emotions have vigorously defended the malleability of emotions over time and across cultures by rejecting the universalism of basic emotions proposed by proponents of biologism such as Paul Ekman.[26] This is obviously an important epistemological question regarding what emotions are or may be. Even if one accepted the possibility of basic human emotions, however they are manifested, it would leave ample room for plasticity, nuance, historical change and 'cogmotion'. In any case, the context and phenomenology of even the basic emotions of 'natural kinds' such as fear are crucial for the historian. What did people fear in any given time, why did they fear, and what consequences did their fear have?[27] In the end, emotions are what emotions do. Or, as Boddice has put it, the history of emotions should not be history about preconceived emotions in context but a history of the nuances of past emotions that may reveal a degree of unfamiliarity, yet be understood in biocultural and embodied terms. This will also merge the history of the senses with an interpretation of embodied feelings. What we smell and feel is not there until we give temporal and affective meaning to it.[28]

The historian of religion Robert C. Fuller has taken on a task as ambitious as Smail's in telling the story of 'religion in the flesh', or how the human biological and neural make-up has made us inherently prone towards religion. Yet, obviously, there is no one deterministic path that leads people to express their spirituality, if at all.[29] Clearly, problems similar to those in Smail's enterprise exist in Fuller's, although to a certain degree this is true in every theoretical adaptation in history, whether it is cognitive psychology or psychoanalysis. The past as history does not conform to universalizing tendencies, yet historians constantly apply conceptual thought and theoretical approaches in their research. Obviously, the natural

sciences can (seemingly, at least) claim universal adaptation, whereas modern psychological theories are certainly shaped by today's society.

The key is to make theoretical insights credible and applicable in the face of the past by historicizing them. This should mean avoiding a straightforward application of psychological or social-scientific theory to one's empirical sources. Instead, a critical dialogue between theories and sources or data should enhance our insights into the past and add to our theoretical understanding.[30] This bidirectional pathway to historical understanding may prove a challenge for the combination of brain sciences and history, though, because it crosses the line between 'the two cultures'. Historians are usually not in a position to develop brain sciences, and the notion of brain plasticity does not in itself rewrite the history of emotions or other fields. However, historians may be able to converse with the social neurosciences and add to the understanding of cultural, social and temporal variation in human brain/body interaction with the environment. Furthermore, critical neurosciences may add to the understanding of how the social environment is constructed and embodied in practice.

Some historians are surely tempted to dismiss the examples mentioned above as useless tautologies. Yes, human biology is an inescapable fact that sets certain limits to human experience that are, however, not easily determined. But if biology does not determine human culture, knowledge, emotions and actions, why bother researching it at all? Is it not more convenient to just leave it to biologists and brain scientists and to concentrate on what we know best, that is, historical change and its social constructivist underpinnings?

However, as demonstrated, the human brain/body exists in history. In this regard, therefore, critical neurosciences need history. Furthermore, I argue that we cannot dismiss the brain sciences, because they do not dismiss culture (although as a presentist field of science they often dismiss history). Human experience and symbols do not reside purely out there in

the cultural web in Geertzian fashion; rather, they are embedded in our bodies and their neural networks. Nature and nurture are a two-way street, not a hardware and software application. I find the definition of culture as an always limited human enterprise to symbolize and share our inner feelings with other people to be a fruitful idea.[31] Culture and human symbols do not reside outside or inside of us but rather in between us.

Post-traumatic stress disorder (PTSD) may offer a useful insight into the bidirectional nature of both the brain sciences and culture. I do not evaluate the usefulness of PTSD diagnostics here; that is not my point. However, it is interesting to observe that it is impossible to draw a universal chart of symptoms of traumatic experiences that have resulted from otherwise comparable circumstances. There seems to be wide cultural and temporal variation in experiences labelled as 'traumatic'. In the Finnish case, for instance, the shell-shocked veterans of the Second World War often experienced their trauma as if they had been physically wounded, or even dismembered, although they had no visible physical wounds and had not lost any body parts. Somatic symptoms that imitated physical wounds were common elsewhere as well, especially in societies that did not accept the concept of individual psychological damage. In a way, being shell-shocked was a political statement.[32]

At first, there seems to be little ground for claiming that war-related trauma or even modern PTSD is an entirely socially constructed phenomenon, that is, a product of bare culture. Trauma occurs when one is pushed to one's limits and forced to experience something extraordinary. Yet no human has ever existed outside culture. There is cultural and personal variation in what is considered extraordinary. But one is usually able to find some shared symptoms across cultures and historical eras. In keeping with the biocultural framing this article has proposed, there have been evident continuities across time and place. In some studies Russian soldiers of the First and the Second World Wars have been reported as not having suffered from 'Western' traumas. Perhaps not, but that does not mean that they did

not suffer from anything. Psychological and individual trauma was not recognized in Russian society at the time, but at the same time desertion and self-inflicted wounds abounded in the ranks along with mutism, convulsions and fatigue – symptoms similar to those their fellow Western combatants experienced.[33] Dualistic reasoning stressing bare biology or culture is not justified. Trauma may set a good example, showing that embracing neuroplasticity does not require us to focus on profound differences.

However, it is more than clear that biology and genes do not determine human experience as such. Fear of air raids and shelling was obviously a non-existent feeling for early modern people. Yet the social, cultural and temporal variations have biological limitations; human responses to unimaginable events tend to produce similar, though not the same, outcomes. The critical neurosciences and brain plasticity could offer a middle ground to observe traumatic experiences in history.

Towards an embodied understanding of emotions

This article has suggested an epistemological shift towards a corporeal understanding of emotions and social constructivism. This leads theoretically towards understanding emotions as historically changing experiences and cognitive, intellectual concepts. These have, moreover, certain transcultural and recurring aspects. Inevitably, this epistemological shift brings the non-conscious back into the history of emotions. Interestingly, the differences between psychoanalysis and modern brain science are marked, but what these disciplines share is a challenge to the view that 'consciousness is the master in its own house'.[34] The self cannot be its own master, because many of the processes of the brain and nervous system occur non-cognitively, that is, outside of awareness. Yet, at the same time, neuroscientifically understood emotions are intellectual 'thoughts' and thus susceptible to navigation and cognitive change. Obviously, the acceptance of the neuroscientific view leads to an

intellectual problem that cannot be discussed here at length. In a nutshell, if one seeks to adopt a neuroscientific explanation of the 'synaptic self' that integrates culture and the physical environment, then one may be on a path to reductionism. For instance, although brain scientists are increasingly looking at human group behaviour, interaction and neurodiversity,[35] how, in concrete terms, do brain sciences intervene in the history of collectively shared emotions or emotionally charged collective symbols? This concrete explanation remains to be seen.

Although sympathetic towards the theoretical advances that brain sciences may offer, this article, at the same time, sees the methodological difficulties and dangers in the adaptation of 'corporeal constructivism', which need further exploration. Historians who are critical towards the adaptation of neurosciences in the history of emotions have pointed out that one of the greatest mistakes one can make is to pick up a fashionable theory of affective neurosciences and base one's historical research on it. Within a few years, the theory will, in most cases, be debunked or have developed considerably further, whereas the lifespan of good historical scholarship is expected to be considerably longer.[36] Moreover, history does not happen in a lab. Brain-scientific knowledge is produced in an artificial setting that differs from everyday experience – and many of the experiments are conducted on animals. The laboratory is devoid of much of the human meaning given to one's being in the world.[37] Obviously, one cannot run brain scans on the people of the past, and even if one could, how could those data be implemented in historical research in a meaningful way?

Last but not least, many a social scientist and historian alike has noted that the brain sciences (or their popularizations) make very strong social claims based on rather thin evidence. One of the examples is the 'mirror neurons' found in the mid-1990s in monkeys and in humans soon after. Mirroring was swiftly established thereafter as the underlying proof of human reciprocity in feeling and, indeed, in culture, language, religion and the entire

foundation of sociability in humans. That is, on the basis of rather vague evidence, this mirroring was offered as the foundation for everything. When a fellow human being or a monkey was seen performing a certain task, for instance hand actions raising food items to the mouth, the corresponding sensorimotor neurons of a passive person or monkey were firing at the same time, as if they were performing the task themselves, not merely watching it.[38] These findings were, again, interesting as such; a reported proof of embodied intersubjectivity in humans and some apes. Hence, the mirror neurons further point towards an embodied and social theory of emotions. But a social historian and a historian of emotions should step in and point out the vast evidence of changes, nuances, capabilities and incapacities in human emotional reciprocity, past and present, that calls into question simplistic explanations that do not in fact explain anything about history, but instead merely try to establish the mechanism of reciprocities. For instance, humans may possess an in-built capacity for empathy, but the changing economies and politics of the nurturing and distribution of empathy, especially in large groups that are not based on face-to-face interaction, are historically relevant.

Conclusion

Indeed, it is not the task of an historian to concentrate on arguing which neuroscientific theory can explain emotions in the past, if any. What we can do, however, is concentrate on the question of how epistemological challenges posed by the brain sciences could be critically integrated into historical scholarship. Based on a number of recent appeals for integrating 'biology' into the history of emotions, this task seems unavoidable.

The first step should be debunking the view of the brain sciences as representing only universality as opposed to culture and social constructivism. What is universal is cultural, and vice versa – we live in an embodied and cultured universe. While emotions change and

develop over time, there certainly are evolutionary and genetic continuities in human emotional experiences. These two aspects should not be seen as mutually exclusive, but they may be theoretically merged into a biocultural understanding of how emotions are created and experienced in the historical context and how they change. Some first steps have already been taken, as illustrated in this article. Historians of emotions do not need to submit to the biologism suggested by the evolutionary sciences, or even the initially reductionist basic-emotion-driven neurohistory that since its launch a decade ago has admittedly matured to appreciate more the co-evolutionary merger of culture and nature. However, they may benefit from appreciating the neuroscientific understanding of why we experience emotions in certain contexts the way we tend to do.

At the same time, it should be kept in mind that, at least for the history of emotions, the brain sciences primarily offer a tool for posing new questions. There may be a number of fields in the history of emotions that will do well without critical or social neurosciences, such as the study of the politics and rhetoric of emotions or emotional communities; that is, the shared emotional norms, values and expressive styles.[39] In a nutshell, this article recommends caution towards the blind application of neuroscientific data or theory in historical research. However, theoretical insights from the socially oriented brain sciences are welcome as heuristic methods in researching the history of emotions in a biocultural context.

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1 William M. Reddy, 'Saying Something New: Practice Theory and Cognitive Neuroscience', *Arcadia*, 44:1 (2009), pp. 8–23; Larry S. McGrath, 'Historiography, Affect, and the Neurosciences', *History of Psychology*, 20:2 (2017), pp. 129–47; and Rob Boddice, *The*

History of Emotions (Manchester: Manchester University Press, 2018), pp. 32–4, 39–40, 132–67.

2 An overview of the application of cognitive psychology in the history of emotions can be found in William M. Reddy, *The Navigation of Feeling: A Framework for the History of Emotions* (Cambridge: Cambridge University Press, 2001), pp. 3–33. Since the publication of his seminal book, Reddy's theoretical work has increasingly engaged with the neurosciences.

3 E.g. Seth Duncan and Lisa Feldman Barrett, 'Affect is a Form of Cognition: A Neurobiological Analysis', *Cognition and Emotion*, 21:6 (2007), pp. 1184–211; and Luiz Pessoa, *The Cognitive-Emotional Brain: From Interactions to Integration* (Cambridge, MA: MIT Press, 2013).

4 Reddy, 'Saying Something New'; William M. Reddy, 'Historical Research on the Self and Emotions', *Emotion Review*, 1:4 (2009), pp. 302–15 (312); and William M. Reddy, 'Neuroscience and the Fallacies of Functionalism', *History and Theory*, 49:3 (2010), pp. 412–25.

5 Boddice, *History of Emotions*, p. 119.

6 Reddy, 'Saying Something New', p. 21.

7 Boddice, *History of Emotions*, p. 32.

8 Suparna Choudhury and Jan Slaby (eds), *Critical Neuroscience: A Handbook of the Social and Cultural Contexts of Neuroscience* (London: Wiley-Blackwell, 2011). Journals such as *Social Neuroscience* and *Social Cognitive and Affective Neuroscience* have been recently dedicated to the social brain sciences, although their focus has so far been rather 'traditional' neuroscience, i.e. dominated by laboratory settings and brain scans.

9 C. P. Snow, *The Two Cultures* (1959; Cambridge: Cambridge University Press, 1998), pp. 1–107. It is noteworthy that Snow's perceptions are primarily 1950s British with 'a Second Look' included in the volume used here from the early 1960s, reprinted in 1998.

[10] Nikolas Rose and Joelle M. Abi-Rached, *Neuro: The New Brain Sciences and the Management of the Mind* (Princeton, NJ: Princeton University Press, 2013), pp. 47–52.

[11] John Corrigan, 'Religion and Emotions', in Susan J. Matt and Peter N. Stearns (eds), *Doing Emotions History* (Urbana: University of Illinois Press, 2014), pp. 143–62 (158).

[12] Susan J. Matt and Peter N. Stearns, afterword in Matt and Stearns, *Doing Emotions History*, pp. 205–9 (206).

[13] Boddice, *History of Emotions*; and Rob Boddice, *A History of Feelings* (London: Reaktion Books, 2019), pp. 9–11.

[14] Rose and Abi-Rached, *Neuro*, pp. 151–60.

[15] Lee Xenakis Blonder, 'Brain and Emotion Relations in Culturally Diverse Populations', in Alexander Laban Hinton (ed.), *Biocultural Approaches to the Emotions* (Cambridge: Cambridge University Press, 1999), pp. 274–96; see also Suparna Choudhury, 'Culturing the Adolescent Brain: What can Neuroscience Learn from Anthropology?', *Social Cognitive and Affective Neuroscience*, 5:2–3 (2010), pp. 159–67.

[16] Daniel Lord Smail, *On Deep History and the Brain* (Berkeley: University of California Press, 2008); and Daniel Lord Smail, 'Neuroscience and the Dialectics of History', *Análise Social*, 47:4 (2012), pp. 894–909.

[17] Daniel Lord Smail, 'Neurohistory in Action: Hoarding and the Human Past', *Isis*, 105:1 (2014), pp. 110–22 (110).

[18] Daniel L. Smail, 'Retour sur "On Deep History and the Brain"', *Tracés*, 14 (2014), pp. 151–63.

[19] Smail, *On Deep History*, pp. 157–89.

[20] Smail, 'Neurohistory in Action'.

[21] Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* (New York: Anchor Books, 1966).

[22] Smail, ‘Neurohistory in Action’, pp. 120–1.

[23] Rob Boddice, ‘Neurohistory’, with comment from Daniel Lord Smail and response from Rob Boddice, in Marek Tamm and Peter Burke (eds), *Debating New Approaches to History* (London: Bloomsbury, 2019), pp. 301–25.

[24] Boddice, *History of Emotions*, pp. 39, 154–64.

[25] On basic emotions see Paul Ekman, ‘An Argument for Basic Emotions’, *Cognition and Emotion*, 6 (1992), pp. 3–4, 169–200; and Jerome Kagan, *What is Emotion? History, Measures and Meanings* (New Haven, CT: Yale University Press, 2007), pp. 196–216. For a critical overview on Ekman’s universalities of facial expression of basic emotions, see Jan Plamper, *The History of Emotions: An Introduction*, Keith Tribe (transl.) (Oxford: Oxford University Press, 2015), pp. 147–63 (originally published in German in 2012); and Barbara H. Rosenwein, ‘Problems and Methods in the History of Emotion’, *Passions in Context*, 1 (2010), pp. 1–32 (5–7). A recent strong claim for socially constructed brains from a life scientist is Lisa Feldman Barrett, *How Emotions are Made: The Secret Life of the Brain* (London: Macmillan, 2017); see also Lisa Feldman Barrett, ‘Are Emotions Natural Kinds?’, *Perspectives on Psychological Science*, 1:1 (2006), pp. 28–58.

[26] Plamper, *History of Emotions*, pp. 147–63; and Boddice, *History of Emotions*, pp. 115–16.

[27] Joanna Bourke, *Fear: A Cultural History* (London: Virago, 2005).

[28] Rob Boddice, ‘The History of Emotions: Past, Present, Future’, *Revista de Estudios Sociales*, 62 (2017), pp. 10–15 (11); and Boddice, *History of Emotions*, pp. 132–4.

[29] Robert C. Fuller, *Spirituality in the Flesh: Bodily Sources of Religious Experience* (Oxford: Oxford University Press, 2008).

[30] See Ville Kivimäki, ‘Traumaperäinen stressihäiriö ja historia – diagnoosista historiantutkimuksen käsitteeksi’, in Matti H. Hannikainen et al. (eds), *Menneisyyden rakentajat: Teoriat historiantutkimuksessa* (Helsinki: Gaudeamus, 2018), pp. 94–115; and

Tuomas Tepora, ‘Kiihkeä historia – tunteet historiantutkimuksessa’, in Hannikainen et al., *Menneisyyden rakentajat*, pp. 77–93.

31 Peter Fonagy et al., *Affect Regulation, Mentalization, and the Development of the Self* (New York: Other Press, 2002).

32 Ville Kivimäki, *Battled Nerves: Finnish Soldiers’ War Experiences, Trauma, and Military Psychiatry, 1941–44* (Turku, Finland: Åbo Akademi University, 2013), pp. 60–6 and passim.

33 Catherine Merridale, *Ivan’s War: The Red Army, 1939–45* (London: Faber & Faber, 2005), pp. 232–4.

34 Rose and Abi-Rached, *Neuro*, p. 200.

35 *Neurodiversity* refers to an approach that sees neurological conditions such as autism as reflecting normal variation in the human genome rather than pathologies.

36 Polemically Plamper, *History of Emotions*, pp. 147–243, esp. p. 243.

37 See Rose and Abi-Rached, *Neuro*, pp. 82–109.

38 Rose and Abi-Rached, *Neuro*, pp. 145–7; and Plamper, *History of Emotions*, pp. 219–23. For original research on mirror neurons in macaque monkeys, see, e.g., Vittorio Gallese et al., ‘Action Recognition in Premotor Cortex’, *Brain*, 119:2 (1996), pp. 593–609.

39 For politics and rhetoric, see Sara Ahmed, *The Cultural Politics of Emotion* (Edinburgh: Edinburgh University Press, 2004). For emotional communities, see Barbara H. Rosenwein, *Emotional Communities in the Early Middle Ages* (Ithaca, NY: Cornell University Press, 2006), pp. 1–29; and Barbara H. Rosenwein, *Generations of Feeling: A History of Emotions, 600–1700* (Cambridge: Cambridge University Press, 2016).